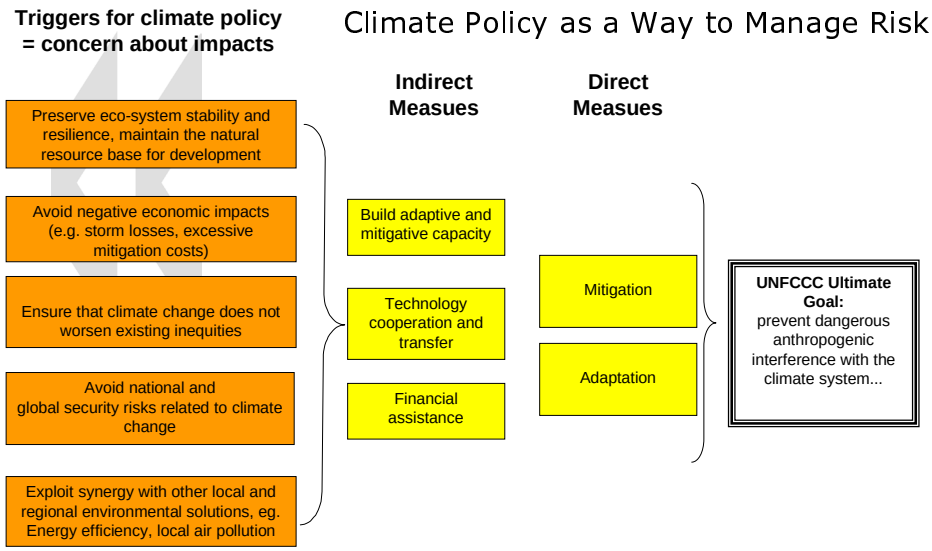
Climate Policy as a Way to Manage Risk



IPCC - Policy Relevant Research Agenda

- Integrated approaches to mitigation and adaptation
- Selected impacts numeraires
  - organised by level of detail (how to do this) and region
- Probabilistic characterisation of uncertainty
- Better characterise eco-system impacts
  - “hot spots” with top-down tools
  - extreme events as drivers for impacts
- Socio-economic constraints, eco-system thresholds for long term climate
- “Science of integration” questions - network for IAM

Advancing Adaptation and Mitigation Policies

- Both adaptation and mitigation are essential
- Adaptation essential
  - deal with unavoidable climate change, those countries vulnerable in near term (e.g. narrow range of uncertainty on impacts in 2050 timeframe)
- Learning by doing, gain experience, iterative policy process
  - Build institutions and capacity to deal with the problem
  - Needs and process through which they are articulated matter

Types of Policy Benefits

- Adaptation and mitigation policy benefits
- Direct climate and ancillary benefits
  - Is it possible and useful to separate these?

Ways to organise the information

- Physical-environmental; social; economic
  - different levels of analysis required; cascading uncertainties apply
- By sector
  - careful about interactions and double counting
- By people or type of actor
  - producers and consumers

Impacts Information: Why and How?

- Trade-offs - how to identify them, to assess and make policies to address?
- Need to identify (community) preferences for how to manage risks of climate change
- Use of different numeraires - yes!
- Impacts assessments reflect:
  - improved understanding of bio-geophysical interactions
  - more sophisticated socio-economic vulnerability assessment
- Disaggregation helps provides transparency, aggregation and economic assessment still useful
  - (and will be done even if non-economists don't like it)
- Decision frameworks that can encompass multiple numeraires?

Alternative numeraires for different categories and levels of impact

Sector category of impact (Smith and Hitz)	Physical/environmental numeraires (+Rothman, Leemans)	Social numeraires (+Parry, Nicholls, Arnell et al. 2002)	Economic numeraires (+Hanneman, Rothman)
• Water resources	Run-off	Millions people under water stress	Net irrigation requirements Effects on water using industry Municipal water supply
• Sea level rise		Millions of people at risk of flooding	Direct cost (protection, dryland and wetland loss)
• Agriculture		Millions people at risk of hunger	Change in agricultural productivity, GDP change
• Health		Mortality, morbidity, millions at risk of malaria	GDP loss from loss of human life, DALYS

Concern About Impacts is a Common Interest Driving Policy Decisions

Three levels of impacts:

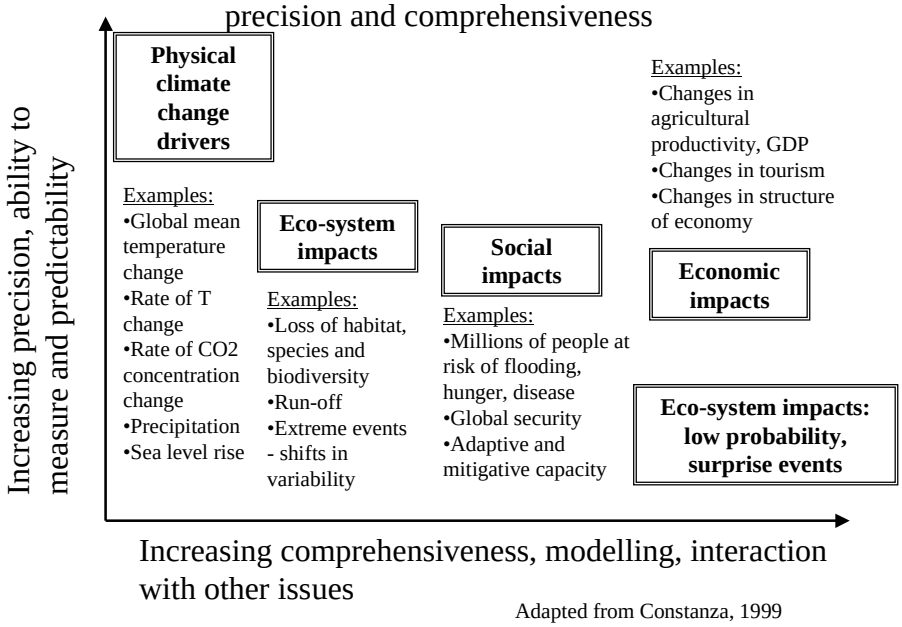
1. Physical environmental impacts based in natural systems: e.g. T change, SLR, extreme events, risks to eco-systems, low probability-high impact risks

2. Social and geo-political : potential for damages to be more severe in poor regions and to exacerbate existing disparities across world regions or national regoins; human health risks

3. Economic: how climate change impacts affect markets in various sectors e.g. for agricultural or marine products, forest products or tourism

OECD OCDE

Different levels of impacts and relationships between precision and comprehensiveness



Adapted from Constanza, 1999

Issues for Benefits Assessment

From GSP(2002)6REV1

- Type of benefits (Parry, Tirpak, Jochem, O'Oconnor, OECD)
- Choice of numeraire, estimation and valuation issues (Rothman, Leemans, Schneider, Nicholls; Hanemann;)
- Spatial scales for decision-making (Rotmans)
- Uncertainty - what drives it, how to build it into impact assessments, represent it in results? (Jenkins, Wigley, Schneider)
- Decision frameworks - putting benefits into contexts of costs - to assist policy decisions (Schellnhuber, Jacoby, Dowlatabadi, Richels)
- Adaptation benefits and connections to mitigation benefits (Callaway, Yohe)
- Key 'marker' indicators - is change good or bad?
- Temporal scales (- 2020, 2050, 2100 - Parry, Nicolls, Yamin)
- Baseline issues - reference scenarios needed or not?
- Comprehensiveness, including interactions among sectors (Hanemann)
- Distributional issues matter - but how much is known? (Tol)